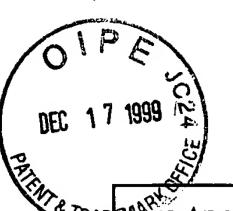
GAU1643



Patent Docket P1099C1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

TRADEM TE Application of

William R. Arathoon et al.

Serial No.: 09/373,403

Filed: 12 August 1999

For: A METHOD FOR MAKING

MULTISPECIFIC ANTIBODIES HAVING HETEROMULTIMERIC AND COMMON

COMPONENTS

Group Art Unit: 1643

Examiner: Unassigned

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Assistant Commissioner of Patents, Washington, D.C. 20231

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December <u>//</u>, 19

Pamela Gavette

INFORMATION DISCLOSURE STATEMENT

Assistant Commissioner of Patents Washington, D.C. 20231

Sir:

Applicants submit herewith patents, publications or other information (attached hereto and listed on the attached Form PTO-1449) of which they are aware, which they believe may be material to the examination of this application and in respect of which there may be a duty to disclose in accordance with 37 CFR §1.56.

This Information Disclosure Statement:

- (a) [] accompanies the new patent application submitted herewith. 37 CFR §1.97(a).
- (b) [] is filed within three months after the filing date of the application or within three months after the date of entry of the national stage of a PCT application as set forth in 37 CFR§1.491.
- (c) [X] as far as is known to the undersigned, is filed before the mailing date of a first Office action on the merits. Should any fee be due, the U.S. Patent and Trademark Office is hereby authorized to charge Deposit Account No. 07-0630 in the amount of \$240.00 to cover the cost of this Information Disclosure Statement. Any deficiency or overpayment should be charged or credited to this deposit account.
- (d) [] is filed after the first Office Action and more than three months after the application's filing date or PCT national stage date of entry filing but, as far as is known to the undersigned, prior to the mailing date of either a final rejection or a notice of allowance, whichever occurs first, and is accompanied by either the fee (\$240) set

AJ 1>#4 1-14-00 09/373,403 Page 2

forth in 37 CFR §1.17(p) or a statement as specified in 37 CFR §1.97(e), as checked below. Should any fee be due, the U.S. Patent and Trademark Office is hereby authorized to charge Deposit Account No.07-0630 in the amount of \$240.00 to cover the cost of this Information Disclosure Statement. Any deficiency or overpayment should be charged or credited to this deposit account. A duplicate of this sheet is enclosed.

(e) [] is filed after the mailing date of either a final rejection or a notice of allowance, whichever occurred first, and is accompanied by the fee (\$130) set forth in 37 CFR §1.17(i) and a statement as specified in 37 CFR §1.97(e), as checked below. This document is to be considered as a petition requesting consideration of the information disclosure statement. The U.S. Patent and Trademark Office is hereby authorized to charge Deposit Account No.07-0630 in the amount of \$130.00 to cover the cost of this Information Disclosure Statement. Any deficiency or overpayment should be charged or credited to this deposit account. A duplicate of this sheet is enclosed.

[If either of boxes (d) or (e) is checked above, the following statement under 37 CFR § 1.97(e) may need to be completed.] The undersigned states that:

- [] Each item of information contained in the information disclosure statement was cited in a communication mailed from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this information disclosure statement.
- [] No item of information contained in this information disclosure statement was cited in a communication mailed from a foreign patent office in a counterpart foreign application and, to the knowledge of the undersigned after making reasonable inquiry, was known to any individual designated in 37 CFR §1.56(c) more than three months prior to the filing of this information disclosure statement.

A list of the patent(s) or publication(s) is set forth on the attached Form PTO-1449 (Modified).

A copy of the items on PTO-1449 is supplied herewith:

[] each [X] none [] only those listed below:

Those patent(s) or publication(s) which are marked with an asterisk (*) in the attached PTO-1449 form are not supplied because they were previously cited by or submitted to the Office in a prior application Serial No. <u>08/850,058</u>, filed <u>May 2, 1997</u> and relied upon in this application for an earlier filing date under 35 USC § 120.

[] BLAST results enclosed:

The undersigned also wishes to bring to the attention of the Examiner BLAST results of computerized alignments of the against sequences contained in the GenBank and

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Dayhoff databases. The BLAST results are provided in paper form and are identified as reference "BLAST Results A-1- A-()" (GenBank) and "BLAST Results B-1 - B-()" (Dayhoff) on the PTO Form 1449. Applicant requests that these references also be considered and that the Form 1449 be initialed to indicate the Examiner's consideration of the references.

A concise explanation of relevance of the items listed on PTO-1449 is:

[X] not given

- [] given for each listed item
- [] given for only non-English language listed item(s) [Required]
- [] in the form of an English language copy of a Search Report from a foreign patent office, issued in a counterpart application, which refers to the relevant portions of the references.

The Examiner is reminded that a "concise explanation of the relevance" of the submitted prior art "may be nothing more than identification of the particular figure or paragraph of the patent or publication which has some relation to the claimed invention," MPEP §609.

While the information and references disclosed in this Information Disclosure Statement may be "material" pursuant to 37 CFR § 1.56, it is not intended to constitute an admission that any patent, publication or other information referred to therein is "prior art" for this invention unless specifically designated as such.

In accordance with 37 CFR §1.97(g), the filing of this Information Disclosure Statement shall not be construed to mean that a search has been made or that no other material information as defined in 37 CFR §1.56(a) exists. It is submitted that the Information Disclosure Statement is in compliance with 37 CFR §1.98 and MPEP §609 and the Examiner is respectfully requested to consider the listed references.

Respectfully submitted,

GENENTECH, INC.,

Date: December 1999

Deirdre L. Conley, Ph.D

Reg. No. 36,487

1 DNA Way

So. San Francisco, CA 94080-4990

Phone: (650) 225-2066 Fax: (650) 952-9881

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| | | veral sheets if necessary | | | Filing Date | Group | <u> </u> | |
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| | | | | U.S. PATENT DOCUMENTS | | - | | |
| Examiner nitials | | Document Number | Date | Name | Class | Subclass | Filing Date | |
| | * 1 | 4,816,567 | 28.03.89 | Cabilly et al. | | | , <u>_</u> , | |
| | * 2 | 5,116,964 | 26.05.92 | Capon et al. | | | | |
| | | | | FOREIGN PATENT DOCUMENTS | | | | |
| Examiner nitials | | Document Number | Date | Country | Class | Subclass | Translation Yes No | |
| | * 3 | 314,317 | 03.05.89 | EPO | | | | |
| | * 4 | WO 89/02922 | 06.04.89 | PCT | | | | |
| 1. 1 | * 5 | WO 91/08298 | 13.06.91 | PCT | ļ | 3 | | |
| | * 6 | WO 92/10209 | 25.06.92 | PCT | | | 4 | |
| | * 7 | WO 92/22653 | 23.12.92 | PCT | | | | |
| | * 8 | WO 93/06217 | 01.04.93 | PCT | | | | |
| | * 9 | WO 93/11162 | 10.06.93 | PCT | | | | |
| | *10 | WO 96/27011 | 06.09.96 | PCT | | 1 | | |
| | *11 | WO 96/37621 | 28.11.96 | PCT | | 1 . | | |
| | | | OTHER DISCLO | SURES (Including Author, Title, Date, | Pertinent Pages, etc | c.) | | |
| | | Barton, "Protein | sequence alignm | ent and database scanning Prot | ein Structure Pr | ediction pp | s. 31-63 (199 | |
| | *12/ | | | | | | | |
| | *13 | Berg et al., "Bispecific Antibodies that Mediate Killing of Cells Infected with Human Immunodeficiency Virus of Any Strain" Proc. Natl. Acad. Sci. USA 88:4723-4727 (June 1991) | | | | | | |
| | *14 | Berman et al., "Protection from Genital Herpes Simplex Virus Type 2 Infection by Vaccination with Clone Type 1 Glycoprotein D" Science 227(4693):1490-1492 (March 22, 1985) | | | | | | |
| | | Byrn et al., "Biological Properties of a CD4 Immunoadhesin" Nature 344:667-670 (April 12, 1990) | | | | | | |
| | *15 | | | | | | | |
| | *16 | Carter et al., "Engineering Subtilisin BPN' for Site-Specific Proteolysis" Proteins: Struct. Funct., Genet. 6:240-248 (1989) | | | | | | |
| | *17 | Carter et al., "High level escherichia coli expression and production of a bivalent humanized antibody fragment" Bio/Technology 10:163-167 (1992) | | | | | | |
| | *18 | Carter et al., "Humanization of an anti-p185HER2 antibody for human cancer therapy" Proc. Natl. Acad. Sci. 89:4285-4289 (May 1992) | | | | | | |
| | *19 | Chamow et al., "A Humanized, Bispecific Immunoadhesin-Antibody That Retargets CD3+ Effectors to Kill HIV-1-Infected Cells" Journal of Immunology 153:4268-4280 (1994) | | | | | | |
| | *20 | Chothia and Lesk, "Canonical structures for the hypervariable regions of immunoglobulins" <u>J. Mol. Biol.</u> 196(4):901-917 (1987) | | | | | | |
| | *21 | Clackson et al., | "Making antibody | y fragments using phage display | libraries" <u>Natu</u> | <u>re</u> 352:624- | 628 (1991) | |

Examiner **Date Considered**

*Examiner:/Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

de Kruif et al., "Leucine Zipper Dimerized Bivalent and Bispecific scFv Antibodies from a Semi-synthetic Antibody Phage Display Library" <u>Journal of Biological Chemistry</u> 271(13):7630-7634 (March 29, 1996)

| LIST OF DISCLOSURES CITED BY APPLICANT (Use several sheels if necessary) OTHER DISCLOSURES (Including Author, Title, Date, Perlinent Pages, etc.) Distance at al., "Bispecific Receptor Clobuline, Novel Tools for the Study of Cellular Interactions" 22 Journal of Immunolacical Methods 162:123-132 (1993) 24 10(13):4071-4079 (1982) 25 Ellison et al., "The nucleotide sequence of a human immunoglobulin Cy1 gene" Nucleic Acids Research 26 Proteins Mech. Enzym., 202:301-336 (1991) 27 Enge et al., "Sispecific Antibodies" Critical Seviews in Immunolacid 12(3,4):101-124 (1992) 26 Fanger et al., "Aligning Amino Acid Sequences: Comparison of Commonly Used Methods" J. Mal. Eval. 27 21:112-125 (1985) Feng et al., "Progressive Alignment and Phylogenetic Tree Construction of Protein Sequences" Methods in Enawmology 183:375-187 (1990) Feng et al., "Frogressive Sequence Alignment as a Prerequisite to Correct Phylogenetic Trees" J. Mol. Eval. 28 Enawmology 183:375-187 (1990) Figini et al., "In Vitro Assembly of Respertoires of Antibody Chains on the Surface of Phage by Renaburation" J. Mol. Biol., 239:68-78 (1994) *10 Secret et al., "Surface Antibodies in Sequence Comparison and Analysis" Macromologular Sequences and Surharison of Health and Surface of Phage by Renaburation" J. Mol. Biol., 239:68-78 (1994) *11 Synthesis pps 1:27-149 (1988) Oriffiths et al., "Sultation of High Affinity Human Antibodies Directly From Large Synthetic Respectoires EMBD_Journal 11:3245-3266 (1994) *13 Eacherichia coli" Journal of Imparial only 152:5368-5374 (1994) *14 Sunface antipens by electron Sucredopy" Journal of Experimental Medicine 12:461-1469 (1986) *15 Mol. Biol. 226:689-89 (1902) *16 Member et al., "Use of hybrid antibody with anti-gent antibody fragments" Froc. Natl. Acad. Sci. USA 90:6444-6448 (vol. 1993) *18 Member et al., "Sucremental of Experimental and Dispecific antibody fragments" Froc. Natl. Acad. Sci. USA 90:6444-6448 (vol. 1993) *18 Member et al., "Sucremental of Experimental Antibody by the Use of Leucine Ep | FORM PTO | -1449 U.S. Dept. of Commerce | Atty Docket No. | Serial No. | | | | |
|---|--|--|--|--------------------|--|--|--|--|
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| (Use several sheets in necessary) This Dale 12 Aug 1999 1643 OTHER DISCLOSHES (Including Author, Title, Date, Pertinent Pages, etc.) Dictach et al., "Bispecific Receptor Globulins, Novel Tools for the Study of Cellular Interactions" Cournal of Immunological Methods 162:123-132 (1993) Ellison et al., "Bispecific Receptor Globulins, Novel Tools for the Study of Cellular Interactions" 10(13):4071-4079 (1982) Ellison et al., "Bispecific Authority of Terroducing Unnatural Amino Acids' Site-Specifically into Proteins' Meth. Enzym. 202:301-316 (1992) Panger et al., "Bispecific Antibodies" Critical Seviews in Immunology 12(3,4):101-124 (1992) Panger et al., "Aligning Amino Acid Sequences: Comparison of Companily Used Methods' d. Mol. Evol. 21:112-125 (1983) Pang et al., "Progressive Alignment and Phylogenetic Tree Construction of Protein Sequences" Methods in Innumology 181:375-387 (1996) Pang et al., "Progressive Sequence Alignment as a Presquisite to Correct Phylogenetic Trees' J. Mol. Evol. 20:101-104 (1992) Pang et al., "Progressive Sequence Alignment as a Presquisite to Correct Phylogenetic Trees' J. Mol. 20:105-106 (1984) Pang et al., "Progressive Sequence Alignment as a Presquisite to Correct Phylogenetic Trees' J. Mol. 20:105-106 (1984) Pang et al., "In Vitro Assembly of Repertoires of Antibody Chains on the Surface of Phage by 20 Menacuration' L. Mol. Biol. 29:68-78 (1994) Pager et al., "Current Methods in Sequence Comparison and Analysis" Mecromologular Sequencing and Synthesia pps. 127-148 (1988) Scrubre et al., "Election Tumor call Lysis Mediated by a Rispecific Single Chain Antibody Expressed in Sacherichia Coli Zupural 10:1245-3160 (1974) Rammerling et al., "Selection of Immunology 12:59:386-397 (1994) Rammerling et al., "Polypodical" Small bivalent and bispecific Single Chain Antibody Expressed in 10:286-10:190 (1994) Rabat et al. Sequences of Proteins of Immunology 13:59:386-397 (1994) Rabat et al. Sequences of Proteins of Immunology 13:59:386-397 (1994) Le Dussal et al., "Suppedific | VEC 1.7 1000 C) Applicant | | | | | | | |
| OTHER DISCLOSURES (including Author, Title, Date, Pertinent Pages, etc.) OTHER DISCLOSURES (including Author, Title, Date, Pertinent Pages, etc.) OTHER DISCLOSURES (including Author, Title, Date, Pertinent Pages, etc.) OTHER DISCLOSURES (including Author, Title, Date, Pertinent Pages, etc.) Pages of the Study of Cellular Interactions' Tournal of Immunological Methods 162:123-122 (1993) Ellison et al., "The nucleotide sequence of a human immunoglobulin Cy, gene' Michola Acida Research 10(13):4071-4079 (1982) Ellison et al., "Biosynthetic Method for Introducing Danatural Amino Acida Ste-Specifically into Proteins' Meth. Enzym. 202:301-335 (1992) Panger et al., "Biosynthetic Methods of Introducing Danatural Amino Acida Ste-Specifically into Proteins' Sequences' Proteins' Meth. Enzym. 202:301-335 (1992) Peng et al., "Aligning Amino Acid Sequences: Comparison of Commonly Used Methods" I. Kol. Evol. 22 1:112-125 (1983) Peng et al., "Progressive Alignment and Phylogenetic Tree Construction of Protein Sequences" Methods in Enzymplomy 138:1375-387 (1990) Peng et al., "Progressive Sequence Alignment as a Frerequisite to Correct Phylogenetic Trees" J. Mol. Expl., 25:133-156 (1981) Peng et al., "Progressive Sequence Alignment as a Frerequisite to Correct Phylogenetic Trees" J. Mol. Expl., 25:135-156 (1981) Peng et al., "In Vitro Assembly of Reportoires of/Antibody Chains on the Surface of Phage by "30 Amanturation" J. Mol. Biol., 239:86-78 (1994) Pages et al., "In Vitro Assembly of Reportoires of/Antibody Chains on the Surface of Phage by "31 Synthesis pps. 127-149 (1998) Sciffiths et al., "Toution of High Affinity Human Antibodies Directly From Large Synthetic Reportoires" Michola July 188-186 (1994) Pages of Antibodies of Immunological Interest. State of Antibody Expressed In Sacher chia Coli "Journal of Immunological Interest. State Addicine 128:1461-1469 (1984) Pages of Alignment of Immunological Interest. State diction, Sethesda, MDINIH Vol. 1:5588-698 (1993) Pages of Alignment of Proceins of Immun | LICT OF DICOLOCUPED OFFED BY ADDUMENT '' 1889 (A.) | | | | | | | |
| O'HER DISCLOSURES (Including Author, Title, Date, Pertinent Pages, etc.) District to X-approx (Calabulins, Novel Tools for the Study of Cellular Interactions Journal of Immunological Methods 162:123-132 (1993) Ellison et al., "The nucleotide sequence of a human immunoglobulin Cy1 gene" Nicleic Acids Research (10(13):4071-4079 (1982) Ellison et al., "Biosynthetic Method for Introducing Unnatural Amino Acids Size-Specifically into Proteins" Neth. Enzym. 202:301-318 (1991) Fonger et al., "Biosynthetic Method for Introducing Unnatural Amino Acids Size-Specifically into Proteins" Neth. Enzym. 202:301-318 (1991) Fonger et al., "Aligning Amino Acid Sequences: Comparison of Commonly Used Methods" J. Mol. Evol. 21:112-125 (1985) Fong et al., "Progressive Alignment and Phylogenetic Tree Construction of Protein Sequences" Methods in Enzymology 183:175-187 (1990) Fong et al., "Progressive Sequence Alignment as a Prerequisite to Correct Phylogenetic Trees" Enzymology 183:175-187 (1990) Progressive Type of Research (1987) Figini et al., "In Vitro Assembly of Reportoires of Antibody Chains on the Surface of Phage by Renaturation" J. Mol. Biol. 239:68-76 (1994) George et al., "Gurrent Methods in Sequence Comparison and Analysis" Macromologular Semiencing and Synthesis pps. 127-149 (1988) Griffiths et al., "Isolation of High Affinity Human Antibodies Directly From Large Synthetic Reportoires' EMBO Journal 11:3245-3260 (1994) Gruber et al., "Efficient Tumor call Lysis Mediated by a Bispecific Single Chain Antibody Expressed in Escherichia Coli" Journal of Lumanhology 152:5368-5374 (1994) Hammorling et al., "Gue of hybrid antibody with anti-G and anti-ferritin specificities in Tocating cell auriance antibody and anti-ferritin specificities in Tocating cell auriance and the Sequence of Hybrid antibody with anti-G and anti-ferritin specificities in Tocating cell auriance and the Sequence of Proteins of Humanological Interest, 5th edition, Bethesda, NO:NIH Vol. 1:688-698 (1991) Fig. 168-698 (1991) Fig. 168-698 (1991) | (Use s | veral sheets if necessary) | Filing Date | Group | | | | |
| O'HER DISCLOSURES (Including Author, Title, Date, Pertinent Pages, etc.) District to X-approx (Calabulins, Novel Tools for the Study of Cellular Interactions Journal of Immunological Methods 162:123-132 (1993) Ellison et al., "The nucleotide sequence of a human immunoglobulin Cy1 gene" Nicleic Acids Research (10(13):4071-4079 (1982) Ellison et al., "Biosynthetic Method for Introducing Unnatural Amino Acids Size-Specifically into Proteins" Neth. Enzym. 202:301-318 (1991) Fonger et al., "Biosynthetic Method for Introducing Unnatural Amino Acids Size-Specifically into Proteins" Neth. Enzym. 202:301-318 (1991) Fonger et al., "Aligning Amino Acid Sequences: Comparison of Commonly Used Methods" J. Mol. Evol. 21:112-125 (1985) Fong et al., "Progressive Alignment and Phylogenetic Tree Construction of Protein Sequences" Methods in Enzymology 183:175-187 (1990) Fong et al., "Progressive Sequence Alignment as a Prerequisite to Correct Phylogenetic Trees" Enzymology 183:175-187 (1990) Progressive Type of Research (1987) Figini et al., "In Vitro Assembly of Reportoires of Antibody Chains on the Surface of Phage by Renaturation" J. Mol. Biol. 239:68-76 (1994) George et al., "Gurrent Methods in Sequence Comparison and Analysis" Macromologular Semiencing and Synthesis pps. 127-149 (1988) Griffiths et al., "Isolation of High Affinity Human Antibodies Directly From Large Synthetic Reportoires' EMBO Journal 11:3245-3260 (1994) Gruber et al., "Efficient Tumor call Lysis Mediated by a Bispecific Single Chain Antibody Expressed in Escherichia Coli" Journal of Lumanhology 152:5368-5374 (1994) Hammorling et al., "Gue of hybrid antibody with anti-G and anti-ferritin specificities in Tocating cell auriance antibody and anti-ferritin specificities in Tocating cell auriance and the Sequence of Hybrid antibody with anti-G and anti-ferritin specificities in Tocating cell auriance and the Sequence of Proteins of Humanological Interest, 5th edition, Bethesda, NO:NIH Vol. 1:688-698 (1991) Fig. 168-698 (1991) Fig. 168-698 (1991) | - | RAD FMARY OF | 12 Aug 1999 | 1643 | | | | |
| *21 Lournal of Immunological Methods 162:123-132 (1993) Ellison et al., "The nucleotide sequence of a human immunoglobulin Cy gene" Malloic Acids Rasearch. 10(13):4071-4079 (1982) **Ellison et al., "Biosynthetic Method for Introducing Unnatural Amino Acids Size-Specifically into Proteins" Meth. Enzym. 202:301-336 (1991) **25 Proteins" Meth. Enzym. 202:301-336 (1991) **26 **Progressive Alignment and Phylogenetic Tree Commonly Used Methods" J. Mol. Evol. 17 (1:112-12) (1985) **27 Progressive Alignment and Phylogenetic Tree Construction of Protein Sequences" Methods in Surymology 183:75-387 (1990) **Feng et al., "Progressive Alignment and Phylogenetic Tree Construction of Protein Sequences" Methods in Surymology 183:75-387 (1990) **Feng et al., "Progressive Sequence Alignment as a Prerequisite to Correct Phylogenetic Trees" J. Mol. 200: 25:351-360 (1981) **Figinit et al., "In Vitro Assembly of Repartoires of Antibody Chains on the Surface of Phage by Renaturation" J. Mol. Biol. 239:68-78 (1994) **Seorge et al., "Current Methods in Sequence Comparison and Analysis" Macromologular Sequencing and Surthesia pps 127-149 (1983) **Griffiths et al., "Isolation of High Affinity Human Antibodies Directly From Large Synthetic Repertoires" MEG. Journal 10:3245-3260 (1994) **Gruber et al., "Full Cournal of Hypsis Mediated by a Sispecific Single Chain Antibody Expressed in Bacherichia Coli" Journal of Impunology 152:5368-5374 (1994) **Gruber et al., "Full Cournal of Hypsis Mediated by a Sispecific Single Chain Antibody Expressed in Bacherichia Coli" Journal of Impunology 152:5368-5374 (1994) **Hammorling et al., "Sispecific Antibody with anti-9° and anti-ferritin specificities in locating cell Sux 196:644-6448 (1994) **Hammorling et al., "Security of Phage Antibodies by Binding Affinity Mimicking Affinity Maturation" J. 1861-1853 (1992) **Hammorling et al., "Security of Phage Antibodies by Binding Affinity Mimicking Affinity Maturation" J. 1868-65 (1992) **Lasky et al., "Sorgation of a | | · | Pertinent Pages, etc.) | | | | | |
| Elison et al., "The nucleotide sequence of a human immunoglobulin Cpt gene" <u>Nucleic Acids Research</u> 24 10(13):4071-4079 (1982) Eliman et al., "Biosynthetic Method for Introducing Unnatural Amino Acids Site-Specifically into Proteins' <u>Meth. Enzym.</u> 202:301-336 (1991) Fanger et al., "Bispecific Antibodies' <u>Critical Reviews in Immunology</u> 12(3,4):101-124 (1992) Feng et al., "Aligning Amino Acid Sequences: Comparison of Commonly Used Methods' <u>J. Kol. Evol.</u> 21:112-125 (1985) Feng et al., "Progressive Alignment and Phylogenetic Tree Construction of Protein Sequences' <u>Methods</u> in <u>Exol. Evol.</u> 21:112-125 (1985) Feng et al., "Progressive Sequence Alignment as a Prerequisite to Correct Phylogenetic Trees' <u>J. Kol. Evol.</u> 25:351-360 (1987) Figini et al., "In Vitro Assembly of Repertoires of Antibody Chains on the Surface of Phage by Renaturation' <u>J. Mol. Biol.</u> 239:68-78 (1994) Seorge et al., "Current Methods in Sequence Comparison and Analysis' <u>Macromolocular Sequencina and Surthelais</u> pps. 127-149 (1988) Griffiths et al., "In Vitro Assembly of Repertoires of Antibody Expressed in Sacherichia Coli' Journal 13:3245-3260 (1994) Gruber et al., "Efficient Tunor Call Lysis Mediated by a Bispecific Single Chain Antibody Expressed in Bacherichia Coli' Journal of Immunological Interprise Single Chain Antibody Expressed in Sacherichia Coli' Journal of Physic Antibody with anti-yo and anti-ferritin specificities in locating cel surface antigens by electron microscopy' Journal of Experimental Medicine 128:1461-1669 (1968) Holliger et al., "Dispodies': Small bivalent and bispecific antibody fragments' Froc. Natl. Acad. Sci. 128 90:6424-6488 (Un) Page) Holliger et al., "Dispodies': Small bivalent and bispecific antibody fragments' Froc. Natl. Acad. Sci. 128 90:6424-6486 (Un) Page) Holliger et al., "Dispodies': Small bivalent and bispecific antibody fragments' Froc. Natl. Acad. Sci. 128 90:6424-6486 (Un) Page) Holliger et al., "Dispodies': Small bivalent and bispecific antibody fragments' Froc. Natl. Acad. Sci. 1 | | | the Study of Cellula | r Interactions" | | | | |
| 24 10(13):4071-4079 (1982) Ellman et al., "Biosynthetic Method for Introducing Unnatural Amino Acids' Site-Specifically into Proteins' Meth. Enzym. 202:301-316 (1991) Panger et al., "Biosynthetic Methodies" Critical Reviews in Immunology 12(3,4):101-124 (1992) Peng et al., "Aligning Amino Acid Sequences: Comparison of Commonly Used Methods' J. Mol. Evol. 21:112-125 (1985) Feng et al., "Progressive Alignment and Phylogenetic Tree Construction of Protein Sequences' Methods in Enzymology 181:375-387 (1990) Peng et al., "Progressive Sequence Alignment as a Prerequisite to Correct Phylogenetic Trees" J. Mol. Evol. 25:351-360 (1987) Figini et al., "In Vitro Assembly of Repertoires of Antibody Chains on the Surface of Phage by Renaturation' L. Mol. Biol. 239:68-78 (1994) Second et al., "Current Methods in Sequence Comparison and Analysis" Macromolecular Sequencing and Surthesia pps. 127-149 (1988) Griffiths et al., "isolation of High Affinity Human Antibodies Directly From Large Synthetic Repertoires' EMMO Journal 13:3245-3260 (1994) Gruber et al., "Efficient Tumor Call Lysis Mediated by a Bispocific Single Chain Antibody Expressed in Sacherichia Coli' Journal of Immunology 152:5368-5374 (1994) Emmærling et al., "Selection of High Affinity Human Antibodies Directly From Large Synthetic Sacherichia Coli' Journal of Immunology 152:5368-5374 (1994) Emmærling et al., "Selection of Notice antibody with anti-3 and anti-ferritin Specificities in locating cell surface antigens by electron Microscopy Journal of Experimental Medicine 128:1461-1469 (1968) Hawkins et al., "Selection of Phage Antibodies by Binding Affinity Minicking Affinity Maturation" J. Mol. Beol. 226:889-889 (1892) Kabat et al., "Selection of Bispecific Antibody by the Ose of Leucine Zippers' Journal of Immunology 148(5):1554-1553 (1992) Lasky et al., "DNA sequence analysis of the type-common glycoprotein-D genes of heroes simplex virus types 1 and 2" DNA 3(16):21-72 (1984) Lasky et al., "Bispecific-Antibody-Mediated Targeting of Radiclaseled Bi | *23 | | | | | | | |
| Proceins' Meth. Enzym. 202:301-336 (1991) Panger et al., "Bispecific Antibodies' Critical Reviews in Immunology 12(3,4):101-124 (1992) Peng et al., "Aligning Amino Acid Sequences: Comparison of Commonly Used Methods' J. Mol. Evol. 21:112-125 (1985) Peng et al., "Progressive Alignment and Phylogenetic Tree Construction of Protein Sequences' Methods in Enzymplogy 18:375-387 (1990) Peng et al., "Progressive Sequence Alignment as a Prerequisite to Correct Phylogenetic Trees" J. Mol. Evol. 25:331-360 (1987) Pigini et al., "In Vitro Assembly of Repertoires of Antibody Chains on the Surface of Phage by Renaturation' J. Mol. Biol. 239:68-78 (1994) George et al., "Current Methods in Sequence Comparison and Analysis' Macromolecular Sequencing and Synthesis psp. 127-149 (1988) Griffiths et al., "Isolation of High Affinity Human Antibodies Directly From Large Synthetic Repertoires' EMBO Journal 13:245-3260 (1954) Gruber et al., "Efficient Tumor Call Lysis Mediated by a Bispecific Single Chain Antibody Expressed in Eacherichia Coll' Journal of Immunology 153:5368-5374 (1994) **January Immunology 153:5368-5374 (1994) **January Immunology 154:5368-5374 (1994) **January Immunology 155:5368-5374 (1994) **January Immunology 156:5368-5374 (1994) **January 156:5389-898 (1992) **January 156:5489-1553 (1992) **January 156:5 | *24 | · · · · · · · · · · · · · · · · · · · | | | | | | |
| Peng et al., "Aligning Amino Acid Sequences: Comparison of Commonly Used Methods" J. Kol. Evol. 121:112-125 (1985) Peng et al., "Progressive Alignment and Phylogenetic Tree Construction of Protein Sequences" Methods in Enzymology 183:375-387 (1990) Peng et al., "Progressive Sequence Alignment as a Prerequisite to Correct Phylogenetic Trees" J. Mol. Expol. 25:35i-360 (1987) Pigini et al., "In Vitro Assembly of Repertoires of Antibody Chains on the Surface of Phage by Renaturation" J. Nol. Biol. 239:68-78 (1994) *310 Seorge et al., "Current Methods in Sequence Comparison and Analysis" Macromolecular Sequencing and Synthesis pps. 127-149 (1988) *321 Sortifiths et al., "Isolation of High Affinity Human Antibodies Directly From Large Synthetic Repertoires" EMBO. Journal 13:3245-3260 (1994) *322 Griffiths et al., "Selection of High Affinity Human Antibodies Directly From Large Synthetic Repertoires" EMBO. Journal 13:3245-3260 (1994) *333 Senterichia Coli" Journal of Immunology 152:5368-5374 (1994) *344 Sunface antigens by electron microscopy" Journal of Experimental Medicine 128:1461-1469 (1968) *355 Hawkins et al., "Selection of Phage Antibodies by Binding Affinity Mimicking Affinity Maturation" J. Mol. Biol. 226:889-89 (1993) *366 Wallinger et al., "Disbodies" Small bivalent and bispecific antibody fragments" Proc. Natl. Acad. Sci. USA 90:6444-6448 (Jul 1994) *376 Kabat et al. Sequences of Proteins of Immunological Interest, 5th edition, Bethesda, MD:NIH Vol. 1:787 (1984) *387 Immunology 148(5):1547-1555 (1992) *398 Use Soussal et al., "Bispecific Moncolonal Antibody-Nediated Targeting of an Indium-111-Labeled DPPA Oimer to Primary Colorectal Tumors: Pharmacokinetics, Biodistribution, Scintigraphy and Immune Response J. Nucl. Med. 74:1662-1671 (1993) *400 Dimer to Primary Colorectal Tumors: Pharmacokinetics, Biodistribution, Scintigraphy and Immune Response 1. Nucl. Med. 74:1662-1671 (1993) | *25 | Proteins" <u>Meth. Enzym.</u> 202:301-336 (1991) | , | | | | | |
| 22 21:112-125 (1985) Feng et al., "Progressive Alignment and Phylogenetic Tree Construction of Protein Sequences" Methods in Enzymology 183:375-387 (1990) Feng et al., "Progressive Sequence Alignment as a Prerequisite to Correct Phylogenetic Trees" J. Mol. Exol. 25:351-360 (1987) Figini et al., "In Vatro Assembly of Repertoires of Antibody Chains on the Surface of Phage by Renaturation" J. Mol. Biol. 239:68-78 (1994) *30 Renaturation" J. Mol. Biol. 239:68-78 (1994) *31 George et al., "Current Methods in Sequence Comparison and Analysis" Macromolecular Sequencing and Synthesis pps. 127-149 (1988) *32 Griffiths et al., "Isolation of High Affinity Human Antibodies Directly From Large Synthetic Repertoires" EMBO_Journal 13:3245-3260 (1994) *33 Escherichia Coli" Journal of Immunology 152:5368-5374 (1994) *34 Hammerling et al., "Use of habrid antibody with anti-G and anti-ferritin specificities in Iocating cell surface antigens by electron microscopy Journal of Experimental Medicine 128:1461-1469 (1988) *35 Hawkins et al., "Selection of Phage Antibodies by Binding Affinity Mimicking Affinity Maturation" J. Mol. Biol. 226:889-89 (1993) *36 Holliger et al., "Diabodies": Small bivalent and bispecific antibody fragments" Proc. Natl. Acad. Sci. 1568-696 (1991) *38 Kabat et al., Sequences of Froteins of Immunological Interest, 5th edition, Bethesda, MD:NIH Vol. 1:38 1:688-696 (1991) *39 Kostelny et al., "Bispecific Monoclonal Antibody Mediated Targeting of an Indium-111-Labeled DTPA 1. Nucl. Med./34:1652-1671 (1993) Le Doussal et al., "Bispecific Monoclonal Antibody-Mediated Targeting of an Indium-111-Labeled DTPA 1. Nucl. Med./34:1652-1671 (1993) Le Doussal et al., "Bispecific-Antibody-Mediated Targeting of an Indium-111-Labeled DTPA 1. Nucl. Med./34:1652-1671 (1993) Le Doussal et al., "Bispecific-Antibody-Mediated Targeting of Radiolabeled Bivalent Haptens: "41 Theoretical Experimental and Clinical Results" Int. J. Cancer Suppl., 7:58-62 (1992) | *26 | Fanger et al., "Bispecific Antibodies" Critical Reviews in Immunology 12(3,4):101-124 (1992) | | | | | | |
| Feng et al., "Progressive Sequence Alignment as a Prerequisite to Correct Phylogenetic Trees" J. Mol. *29 Feng et al., "Progressive Sequence Alignment as a Prerequisite to Correct Phylogenetic Trees" J. Mol. *29 Figin et al., "In Vitro Assembly of Repertoires of Antibody Chains on the Surface of Phage by *30 Renaturation" J. Mol. Biol. 239:68-78 (1994) *31 George et al., "Current Methods in Sequence Comparison and Analysis" **Macromolecular Sequencing and *32 Synthesis pps. 127-149 (1988) Griffiths et al., "Isolation of High Affinity Human Antibodies Directly From Large Synthetic *32 Repertoires" **EMBO Journal 13:3245-3260 (1994) Gruber et al., "Efficient Tumor cell Lysis Mediated by a Bispecific Single Chain Antibody Expressed in *33 Escherichia Coll" **Journal of Immunblody* 152:5368-5374 (1994) Hammerling et al., "Use of highrid antibody with anti-% and anti-ferritin specificities in locating cell *34 surface antigens by electron microscopy **Journal of Experimental Medicine 128:1461-1469 (1968) *35 Mol. Biol. 226:899-896 (1992) *36 Holliger et al., "Diapodies": Small bivalent and bispecific antibody fragments" Froc. Natl. Acad. Sci. *38 90:6444-6448 (Jul 1993) *39 Kabat et al. Sequences of Froteins of Immunological Interest, 5th edition, Bethesda, MD:NIH Vol. *39 1:688-696 (1991) *30 Kostelny et al., "Formation of a Bispecific Antibody by the Use of Leucine Zippers" Journal of Immunology 148(5):1547-1553 (1992) *39 Lesky et al., "Bispecific Monoclonal Antibody-Mediated Targeting of an Indium-111-Labeled DTPA *40 Dimer to Primary Colorectal Tumors: Pharmacokinetics, Biodistribution, Scintigraphy and Immune Response *41 Theoretical Experimental and Clinical Results" Int. J. Cancer Suppl. 7:58-62 (1992) *41 Theoretical Experimental and Clinical Results" Int. J. Cancer Suppl. 7:58-62 (1992) *42 Marks et Al., "By-passing immunization: building high affinity human antibodies by chain shuffling" | *27 | 1 " | | | | | | |
| #29 Evol. 25:351-360 (1987) *30 Figini et al., "In Vitro Assembly of Repertoires of Antibody Chains on the Surface of Phage by Renaturation" J. Mol. Biol. 239:68-78 (1994) *31 Synthesis pps. 127-149 (1988) Griffiths et al., "Isolation of High Affinity Human Antibodies Directly From Large Synthetic Repertoires" EMED Journal 13:3245-3260 (1994) Gruber et al., "Efficient Tumor Call Lysis Mediated by a Bispecific Single Chain Antibody Expressed in Escherichia Coli* Journal of Immunology* 152:5368-5374 (1994) Hammerling et al., "Use of hybrid antibody with anti-G and anti-ferritin specificities in locating cel surface antigens by electron microscopy" Journal of Experimental Medicine 128:1461-1469 (1968) **34 Hawkins et al., "Selection of Phage Antibodies by Binding Affinity Mimicking Affinity Maturation" J. Wol. Biol. 226:889-896 (1992) **35 Holliger et al., "Diabodies" Small bivalent and bispecific antibody fragments Proc. Natl. Acad. Sci. USA 90:6444-6448 (Jul 1993) **36 Kabat et al. Sequences of Proteins of Immunological Interest, 5th edition, Bethesda, MD:NIH Vol. 1:688-696 (1991) **38 Notelly et al., "Formation of a Bispecific Antibody by the Use of Leucine Zippers" Journal of Immunology 148(5):1547-1553 (1992) **39 Lasky et al., "DNA sequence analysis of the type-common glycoprotein-D genes of herpes simplex virus types 1 and 2" DNA 3(1):23-29 (1984) **40 Dimer to Primary Colorectal Tumors: Pharmacokinetics, Biodistribution, Scintigraphy and Immune Response J. Nucl. Med. 34:1662-1671 (1993) Le Doussal et al., "Bispecific Antibody-Mediated Targeting of Radiolabeled Bivalent Haptens: "At Theoretical Experimental and Clinical Results" Int. J. Canacer Suppl., 7:58-62 (1992) **40 Marks et al., "By-passing immunization: building high affinity human antibodies by chain shuffling" | *28 | Feng et al., "Progressive Alignment and Phylogenetic Tree Construction of Protein Sequences" Methods in Enzymology 183:375-387 (1990) | | | | | | |
| *30 Renaturation* J. Mol. Biol. 239:68-78 (1994) *31 George et al., "Current Methods in Sequence Comparison and Analysis* Macromolecular Sequencing and Synthesis pps. 127-149 (1988) *32 Repertoires* EMBO Journal 13:3245-3260 (1994) *33 Griffiths et al., "Isolation of High Affinity Human Antibodies Directly From Large Synthetic Repertoires* EMBO Journal 13:3245-3260 (1994) *34 Gruber et al., "Efficient Tumor Call Lysis Mediated by a Bispecific Single Chain Antibody Expressed in Escherichia Coli* Journal of Immunology 152:5368-5374 (1994) *34 Hammerling et al., "Use of hybrid antibody with anti-% and anti-ferritin specificities in locating cel surface antigens by electron microscopy* Journal of Experimental Medicine 128:1461-1469 (1968) *35 Hawkins et al., "Selection of Phage Antibodies by Binding Affinity Mimicking Affinity Maturation* J. Mol. Biol. 226:889-896 (1992) *38 Mol. Biol. 226:889-896 (1992) *39 90:6444-6448 (Jul 1993) **Nobe 1: Sequences of Proteins of Immunological Interest, 5th edition, Bethesda, MD:NIH Vol. 1:688-696 (1991) **Kostelny et al., "Formation of a Bispecific Antibody by the Use of Leucine Zippers* Journal of Immunology 148(5):1547-1553 (1992) **Lasky et al., "DNA sequence analysis of the type-common glycoprotein-D genes of herpes simplex virus types 1 and 2" DNA 3(1):23-29 (1984) **Le Doussal et al., "Bispecific Monoclonal Antibody-Mediated Targeting of an Indium-111-Labeled DTPA Dimer to Primary Colorectal Tumors: Pharmacokinetics, Biodistribution, Scintigraphy and Immune Response J. Nucl. Med. 34:1662-1671 (1993) **Le Doussal et al., "Bispecific Antibody-Mediated Targeting of Radiolabeled Bivalent Haptens: "41 Theoretical, Experimental and Clinical Results* IDL. J. Cancer Suppl., 7:88-62 (1992) **Marks et al., "By-passing immunization: building high affinity human antibodies by chain shuffling" | *29 | | | | | | | |
| synthesis pps. 127-149 (1988) Griffiths et al., "Isolation of High Affinity Human Antibodies Directly From Large Synthetic Repertoires" EMBO Journal 13:3245-3260 (1994) Gruber et al., "Efficient Tumor Cell Lysis Mediated by a Bispecific Single Chain Antibody Expressed in Escherichia Coli" Journal of Immunology 152:5368-5374 (1994) Hammerling et al., "Use of hybrid antibody with anti-% and anti-ferritin specificities in locating cell surface antigens by electron microscopy" Journal of Experimental Medicine 128:1461-1469 (1968) Hawkins et al., "Selection of Phage Antibodies by Binding Affinity Mimicking Affinity Maturation" J. Mol. Biol. 226:889-896 (1992) Holliger et al., "Diapodies: Small bivalent and bispecific antibody fragments" Proc. Natl. Acad. Sci. USA 90:6444-6448 (Jul 1993) Kabat et al. Sequences of Proteins of Immunological Interest, 5th edition, Bethesda, MD:NIH Vol. 1:688-696 (1991) Kostelny et al., "Formation of a Bispecific Antibody by the Use of Leucine Zippers" Journal of Immunology 148(5):1547-1553 (1992) Lasky et al., "DNA sequence analysis of the type-common glycoprotein-D genes of herpes simplex virus types 1 and 2" DNA 3(1):23-29 (1984) Le Doussal et al., "Bispecific Monoclonal Antibody-Mediated Targeting of an Indium-111-Labeled DTPA Dimer to Primary Colorectal Tumors: Pharmacokinetics, Biodistribution, Scintigraphy and Immune Response J. Nucl. Med. 34:1662-1671 (1993) Le Doussal et al., "Bispecific-Antibody-Mediated Targeting of Radiolabeled Bivalent Haptens: 100 and 10 | *30 | | | | | | | |
| Repertoires" EMBO Journal 13:3245-3260 (1994) Gruber et al., "Efficient Tumor Cell Lysis Mediated by a Bispecific Single Chain Antibody Expressed in Escherichia Coli" Journal of Immuniology 152:5368-5374 (1994) Hammerling et al., "Use of hybrid antibody with anti-G and anti-ferritin specificities in locating cel surface antigens by electron microscopy" Journal of Experimental Medicine 128:1461-1469 (1968) Hawkins et al., "Selection of Phage Antibodies by Binding Affinity Mimicking Affinity Maturation" J. Mol. Biol. 226:889-896 (1992) Holliger et al., "Diabodies". Small bivalent and bispecific antibody fragments" Proc. Natl. Acad. Sci. USA 90:6444-6448 (Jul 1993) Kabat et al. Sequences of Proteins of Immunological Interest, 5th edition, Bethesda, MD:NIH Vol. 1:688-696 (1991) Kostelny et al., "Formation of a Bispecific Antibody by the Use of Leucine Zippers" Journal of Immunology 148(5):1547-1553 (1992) Lasky et al., "DNA sequence analysis of the type-common glycoprotein-D genes of herpes simplex virus types 1 and 2" DNA 3(1):23-29 (1984) Le Doussal et al., "Bispecific Monoclonal Antibody-Mediated Targeting of an Indium-111-Labeled DTPA Jimer to Primary Colorectal Tumors: Pharmacokinetics, Biodistribution, Scintigraphy and Immune Response J. Nucl. Med. 34:1662-1671 (1993) Le Doussal et al., "Bispecific-Antibody-Mediated Targeting of Radiolabeled Bivalent Haptens: Theoretical Experimental and Clinical Results" Int. J. Cancer Suppl. 7:58-62 (1992) | *31 | | | | | | | |
| Hammerling et al., "Use of hybrid antibody with anti-WG and anti-ferritin specificities in locating cel surface antigens by electron microscopy" Journal of Experimental Medicine 128:1461-1469 (1968) Hawkins et al., "Selection of Phage Antibodies by Binding Affinity Mimicking Affinity Maturation" J *35 Mol. Biol. 226:889-896 (1993) Holliger et al., ""Diabodies": Small bivalent and bispecific antibody fragments" Proc. Natl. Acad. Sci. USA 90:6444-6448 (Jul 1993) Kabat et al. Secuences of Proteins of Immunological Interest, 5th edition, Bethesda, MD:NIH Vol. 1:688-696 (1991) Kostelny et al., "Formation of a Bispecific Antibody by the Use of Leucine Zippers" Journal of Immunology 148(5):1547-1553 (1992) Lasky et al., "DNA sequence analysis of the type-common glycoprotein-D genes of herpes simplex virus types 1 and 2" DNA 3(1):23-29 (1984) Le Doussal et al., "Bispecific Monoclonal Antibody-Mediated Targeting of an Indium-111-Labeled DTPA J. Nucl. Med. 34:1662-1671 (1993) Le Doussal et al., "Bispecific-Antibody-Mediated Targeting of Radiolabeled Bivalent Haptens: Theoretical Experimental and Clinical Results" Int. J. Cancer Suppl., 7:58-62 (1992) Marks et al., "By-passing immunization: building high affinity human antibodies by chain shuffling" | *32 | | | | | | | |
| *34 surface antigens by electron microscopy" Journal of Experimental Medicine 128:1461-1469 (1968) Hawkins et al., "Selection of Phage Antibodies by Binding Affinity Mimicking Affinity Maturation" J. *35 Mol. Biol. 226:889-896 (1992) Holliger et al., ""Diabodies": Small bivalent and bispecific antibody fragments" Proc. Natl. Acad. Sci. USA 90:6444-6448 (Jul 1993) Kabat et al. Sequences of Proteins of Immunological Interest, 5th edition, Bethesda, MD:NIH Vol. *37 1:688-696 (1991) Kostelny et al., "Formation of a Bispecific Antibody by the Use of Leucine Zippers" Journal of Immunology 148(5):1547-1553 (1992) Lasky et al., "DNA sequence analysis of the type-common glycoprotein-D genes of herpes simplex virus types 1 and 2" DNA 3(1):23-29 (1984) Le Doussal et al., "Bispecific Monoclonal Antibody-Mediated Targeting of an Indium-111-Labeled DTPA Dimer to Primary Colorectal Tumors: Pharmacokinetics, Biodistribution, Scintigraphy and Immune Response J. Nucl. Med. 34:1662-1671 (1993) Le Doussal et al., "Bispecific-Antibody-Mediated Targeting of Radiolabeled Bivalent Haptens: *41 Theoretical Experimental and Clinical Results" Int. J. Cancer Suppl. 7:58-62 (1992) Marks et al., "By-passing immunization: building high affinity human antibodies by chain shuffling" | *33 | | ific Single Chain Ant: | ibody Expressed in | | | | |
| *35 Mol. Biol. 226:889-896 (1992) Holliger et al., ""Diabodies": Small bivalent and bispecific antibody fragments" Proc. Natl. Acad. Sci. #36 USA 90:6444-6448 (Jul 1993) Kabat et al. Sequences of Proteins of Immunological Interest, 5th edition, Bethesda, MD:NIH Vol. #37 1:688-696 (1991) Kostelny et al., "Formation of a Bispecific Antibody by the Use of Leucine Zippers" Journal of #38 Immunology 148(5):1547-1553 (1992) Lasky et al., "DNA sequence analysis of the type-common glycoprotein-D genes of herpes simplex virus types 1 and 2" DNA 3(1):23-29 (1984) Le Doussal et al., "Bispecific Monoclonal Antibody-Mediated Targeting of an Indium-111-Labeled DTPA #40 Dimer to Primary Colorectal Tumors: Pharmacokinetics, Biodistribution, Scintigraphy and Immune Response J. Nucl. Med. 34:1662-1671 (1993) Le Doussal et al., "Bispecific-Antibody-Mediated Targeting of Radiolabeled Bivalent Haptens: #41 Theoretical, Experimental and Clinical Results" Int. J. Cancer Suppl. 7:58-62 (1992) Marks et al., "By-passing immunization: building high affinity human antibodies by chain shuffling" | *34 | A V | | | | | | |
| Kabat et al. Sequences of Proteins of Immunological Interest, 5th edition, Bethesda, MD:NIH Vol. 1:688-696 (1991) Kostelny et al., "Formation of a Bispecific Antibody by the Use of Leucine Zippers" Journal of *38 Immunology 148(5):1547-1553 (1992) Lasky et al., "DNA sequence analysis of the type-common glycoprotein-D genes of herpes simplex virus *39 types 1 and 2" DNA 3(1):23-29 (1984) Le Doussal et al., "Bispecific Monoclonal Antibody-Mediated Targeting of an Indium-111-Labeled DTPA *40 Dimer to Primary Colorectal Tumors: Pharmacokinetics, Biodistribution, Scintigraphy and Immune Response J. Nucl. Med. 34:1662-1671 (1993) Le Doussal et al., "Bispecific-Antibody-Mediated Targeting of Radiolabeled Bivalent Haptens: *41 Theoretical, Experimental and Clinical Results" Int. J. Cancer Suppl. 7:58-62 (1992) Marks et al., "By-passing immunization: building high affinity human antibodies by chain shuffling" | *35 | | | | | | | |
| *37 1:688-696 (1991) Kostelny et al., "Formation of a Bispecific Antibody by the Use of Leucine Zippers" Journal of Immunology 148(5):1547-1553 (1992) Lasky et al., "DNA sequence analysis of the type-common glycoprotein-D genes of herpes simplex virus types 1 and 2" DNA 3(1):23-29 (1984) Le Doussal et al., "Bispecific Monoclonal Antibody-Mediated Targeting of an Indium-111-Labeled DTPA Dimer to Primary Colorectal Tumors: Pharmacokinetics, Biodistribution, Scintigraphy and Immune Response J. Nucl. Med. 34:1662-1671 (1993) Le Doussal et al., "Bispecific-Antibody-Mediated Targeting of Radiolabeled Bivalent Haptens: *41 Theoretical, Experimental and Clinical Results" Int. J. Cancer Suppl. 7:58-62 (1992) Marks et al., "By-passing immunization: building high affinity human antibodies by chain shuffling" | *36 | | | | | | | |
| Lasky et al., "DNA sequence analysis of the type-common glycoprotein-D genes of herpes simplex virus types 1 and 2" DNA 3(1):23-29 (1984) Le Doussal et al., "Bispecific Monoclonal Antibody-Mediated Targeting of an Indium-111-Labeled DTPA Dimer to Primary Colorectal Tumors: Pharmacokinetics, Biodistribution, Scintigraphy and Immune Response J. Nucl. Med. 34:1662-1671 (1993) Le Doussal et al., "Bispecific-Antibody-Mediated Targeting of Radiolabeled Bivalent Haptens: Theoretical, Experimental and Clinical Results" Int. J. Cancer Suppl. 7:58-62 (1992) Marks et al., "By-passing immunization: building high affinity human antibodies by chain shuffling" | *37 | | | | | | | |
| types 1 and 2" DNA 3(1):23-29 (1984) Le Doussal et al., "Bispecific Monoclonal Antibody-Mediated Targeting of an Indium-111-Labeled DTPA *40 Dimer to Primary Colorectal Tumors: Pharmacokinetics, Biodistribution, Scintigraphy and Immune Response J. Nucl. Med./34:1662-1671 (1993) Le Doussal et al., "Bispecific-Antibody-Mediated Targeting of Radiolabeled Bivalent Haptens: *41 Theoretical, Experimental and Clinical Results" Int. J. Cancer Suppl. 7:58-62 (1992) Marks et al., "By-passing immunization: building high affinity human antibodies by chain shuffling" | *38 | | | | | | | |
| bimer to Primary Colorectal Tumors: Pharmacokinetics, Biodistribution, Scintigraphy and Immune Response J. Nucl. Med./34:1662-1671 (1993) Le Doussal et al., "Bispecific-Antibody-Mediated Targeting of Radiolabeled Bivalent Haptens: *41 Theoretical, Experimental and Clinical Results" Int. J. Cancer Suppl. 7:58-62 (1992) Marks et/al., "By-passing immunization: building high affinity human antibodies by chain shuffling" | *39 | | | | | | | |
| *41 Theoretical, Experimental and Clinical Results" <u>Int. J. Cancer Suppl.</u> 7:58-62 (1992) Marks et al., "By-passing immunization: building high affinity human antibodies by chain shuffling" | *40 | Dimer to Primary Colorectal Tumors: Pharmacokinetics, Biodistribution, Scintigraphy and Immune Response" | | | | | | |
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| | *43 | Marks et al., "By-passing immunization: Mol. Biol. 222:581-597 (1991) | human antibodies from V | -gene libraries disp | layed on phage" <u>J.</u> | | |
| ١ | *44 | McCafferty et al., "Phage antibodies: f 348:552-554 (1990) | ilamentous phage display | ing antibody variable | e domains" <u>Nature</u> | | |
| | *45 | Nissim et al., "Antibody fragments from EMBO Journal 13(3):692-698 (1994) | a 'single pot' phage di | splay library as immu | unochemical reagents" | | |
| | *46 | Nolan et al., "Bifunctional antibodies: Acta 1040:1-11 (1990) | an et al., "Bifunctional antibodies: concept, production and applications" <u>Biochimica et Biophysica</u> a 1040:1-11 (1990) | | | | |
| | *47 | Presta et al., "Humanization of an Antibody Directed Against IgE" <u>J. Immunol.</u> 151(5):2623-2632 (September 1, 1993) | | | | | |
| | *48 | Ridgway et al., "'Knobs-into-holes' Engineering of Antibody C _H 3 Domains for Heavy Chain Heterodimerization" <u>Protein Engineering</u> 9(7):617-621 (1996) | | | | | |
| | *49 | Rodrigues et al., "Engineering a humanized bispecific F(ab')2 fragment for improved binding to T cells" Int. J. Cancer (Suppl.) 7:45-50 (1992) | | | | | |
| | *50 | Segal et al., "Targeting and Activation | of Cytotoxic Lymphocyte | s" <u>Chem. Immunol.</u> 47: | :179-213 (1989) | | |
| | *51 | Shalaby et al., "Development of Humanized Bispecific Antibodies Reactive with Cytotoxic Lymphocytes and Tumor Cells Overexpressing the HER2 Protooncogene" <u>Journal of Experimental Medicine</u> 175:217-225 (Jan 1, 1992) | | | | | |
| | *52 | Songsivilai et al., "Bispecific antibod Immunol. 79:315-321 (1990) | ly: a tool for diagnosis | and treatment of dise | ease" <u>Clin. Exp.</u> | | |
| <u> </u> | *53 | Stickney et al., "Bifunctional Antibody Colorectal Carcinoma" <u>Cancer Research</u> 5 | | utical Delivery Syste | m for Imaging | | |
| | *54 | Suresh et al., "Bispecific Monoclonal Antibodies from Hybrid Hybridomas" Methods in Enzymology 121:210-228 (1986) | | | | | |
| | *55. | Waughan et al., "Human Antibodies With Sub-nanomolar Affinities Isolated From a Large Non-immunized Phage Display Library" Nature Biotechnology 14:309-314 (1996) | | | | | |
| | *56 | Waterhouse et al., "Combinatorial infection and in vivo recombination: a strategy for making large phage antibody repertoires" <u>Nucleic Acids Research</u> 21:2265-2266 (1993) | | | | | |
| | *57 | Weiner et al., "A Human Tumor Xenograft Model of Therapy with a Bispecific Monoclonal Antibody Targeting c-erbB-2 and CD16" Cancer Research 53:94-100 (1993) | | | | | |
| | *58 | Wells and Powers, "In vivo formation and stability of engineered disulfide bonds in subtilisin" <u>J. Biol.</u> Chemistry 261(14):6564-6570 (May 15, 1986) | | | | | |
| | *59/ | Zhu et al., "Remodeling domain interfac (Apr 1997) | es to enhance heterodime | r formation" <u>Protein</u> | <u>Science</u> 6(4):781-788 | | |
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